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Effective Utilization Management in a Military Treatment Facility

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14. ABSTRACT

Healthcare systems and facilities across the country have used utilization management as a response to the pressures of declining revenue, increasingly competitive markets, and escalating operating expenses. The result of utilization management is a reduction of inpatient operations, as well as excess capacity. Wilford Hall Medical Center was studied, using primarily the Medical Expense Performance Reporting System (MEPRS) and Corporate Executive Information System (CEIS) data systems, to determine the magnitude of inpatient activity reduction. In addition, other factors such as Department of Defense referral policy changes and changes in the beneficiary population were examined to determine their role in the decline of inpatient activity.

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Abstract

Healthcare systems and facilities across the country have used utilization management as a response to the pressures of declining revenue, increasingly competitive markets, and escalating operating expenses. The result of utilization management is a reduction of inpatient operations, as well as excess capacity. Wilford Hall Medical Center was studied, using primarily the Medical Expense Performance Reporting System (MEPRS) and Corporate Executive Information System (CEIS) data systems, to determine the magnitude of inpatient activity reduction. In addition, other factors such as Department of Defense referral policy changes and changes in the beneficiary population were examined to determine their role in the decline of inpatient activity. Finally, the data were examined to see if cost savings, both in an aggregate and on a per-disposition basis, were realized from a reduction in inpatient activity. The data indicate that within nine quarters, the first quarter of 1997 through the first quarter of 1999, inpatient dispositions have decreased approximately 45%. Although changes in the size and mix of the beneficiary populations of the local catchment areas have had no significant impact on inpatient activity, changes in the Department of Defense referral policies account for 42% of the drop in dispositions. Also, although overall inpatient expenses have been reduced by 33.5% in the last three years, per dispositions costs have risen by 25.4%. Due to the inability to eliminate certain types of infrastructure and other forms of overhead expenses, dollar-for-dollar reductions can not be expected. However, there exists a need to further study both the inpatient operations by service category, as well as by each type of expense that comprise inpatient operational costs, to see if there are areas where

further reductions can be made. Areas which the data indicate opportunity include surgical and orthopedic services, as well as equipment, supplies, and personnel expenses.

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Introduction

a. Conditions which prompted the study

There are many facets to managed care. Some of the approaches include health promotion, illness and injury prevention, and utilization management (Olden, 1998). Of these three major methodologies, this research project will focus on the application of utilization management.

Utilization management, as one of many tools of managed care, has had a large impact on managed care organizations and hospitals. One of the most significant results of utilization management has been a significant drop in the demand for inpatient beds. This shift in the demand for bed days has forced health care facilities to examine the way they do business and restructure their organizations to meet the changing environment. The Military Healthcare System (MHS) is not immune to the forces of managed care. As health care organizations throughout the nation have changed their method of operations due to managed care, so has the MHS. The MHS has gone through major modifications and adjustments in the past several years, continually reinventing itself to meet its changing needs and requirements (Texidor, Lamar, and Roberts, 1996). A large number of facilities in the MHS were designed, built and structured in a health care environment far different from the one that exists today. Similarly, the organizational and staffing structures were designed in a much different era. They were based upon a concept that if one or two large conflicts occurred, the Soviet Threat of the time, there would be heavy requirements for in-theater and continental United States based beds. With the passing of the Soviet Threat, the defense department has initiated significant reductions in its operations and size of force. With a significantly smaller Defense Department and a

similarly shrinking defense healthcare budget, the MHS finds itself in a similar situation as its civilian counterparts. Just as the civilian health care industry is cutting costs and seeking ways to be more efficient in response to managed care, the MHS finds itself having to do the same due to a smaller healthcare budget and a smaller size force to support.

b. Statement of the Problem

The Wilford Hall Medical Center (WHMC) at Lackland Air Force Base in San Antonio, Texas is a large military treatment facility that opened in 1963. It was designed and made operational in a very different health care environment. Like its civilian counterparts, WHMC has experienced the forces of managed care and budget reductions. Increasing tasks of humanitarian and peacekeeping deployments from Congress and the Department of Defense, and a growing readiness mission have further constrained this facility. In order to deal with these forces, and remain an efficient and effective facility, WHMC has had to more carefully manage its resources and restructure itself.

The purpose of this study is to ascertain whether the managed care initiatives of the Wilford Hall Medical Center have been successful. Specifically, the study will examine the impact of inpatient utilization management and restructuring performed by WHMC in order to cope with excess capacity. The study will also examine to see if there exist alternative factors also impacting on the level of inpatient activity and to what magnitude. The factors in this study include a change in the size of beneficiary population, a shifting in the beneficiary mix, and a change in the referral policies of the Department of Defense.

c. Literature Review

Managed Care

The large-scale growth of managed care came about as a result of numerous factors. The three most significant forces include the escalating cost of health care, federal budget cut-backs, and the solidification and coordination of payors who are no longer willing to pay excessive health care expenses for their beneficiaries.

The average national inflation rate for health care has been approximately ten percent over the last ten years, while the overall inflation rate has averaged four percent over the same period of time (Rutledge, Parsons, and Bernard, 1996; Feldstein, 1994). Currently, the United States spends more than 14 percent of its gross domestic product on health care. Further, the health care industry employs one seventh of working adults in the U.S. (Kirby and Sabastian, 1998). If health care costs continue to increase at the current rate, more than 18 percent of the GDP will be devoted to health care by the end of the decade (Feldstein, 1994).

Society and policy makers are pushing to reduce the rapidly growing allocation of resources to health care. Federal reductions in reimbursements in Medicare and Medicaid programs have been used to reduce those allocations. Several pieces of federal legislation in recent history have caused significant changes to reimbursement and administrative requirements. They include the, Tax Equity and Fiscal Responsibility Act (TEFRA) of 1983 and its introduction of diagnosis-related groups (DRGs), 1988 legislation which introduced resource-based relative value scale (RBRVS), and currently the Balanced Budget Act (BBA) of 1997 (Kongstvedt, 1996; Rutledge, et al., 1996). Although impacting the healthcare industry from different directions, this body of

legislation has collectively given financial incentives to change the way providers behaved. DRGs gave inpatient facilities the incentive to treat inpatients more efficiently since the reimbursement amount was based on the diagnosis, not the length of stay of the patient. The RVRBS modified reimbursement rates because services requiring more cognitive effort were undervalued compared to procedural services. (Feldstein, 1994: Kongstvedt, 1996). The BBA has further reduced rates of reimbursement for most hospital services including, inpatient, outpatient, home health care, and skilled nursing facilities, among others. The total Medicare margins for all hospitals are projected to be between negative 4.4 percent and negative 7.8 percent by the year 2002 (American Hospital Association, 1999).

Additionally, the payors of health care, primarily the government, insurers, and employers, were unable to afford the rising cost of health care for their beneficiaries. Some employers were finding that second only to their payroll expenses, health care had become the most expensive operating cost. They were no longer willing to pay the ever-increasing rates. The payors also desired more control over access and quality of health care. Managed care provided those capabilities (Kongstvedt, 1996).

An additional strain to the health care system is the shifting demographics of the population. There is an increasing percentage of the population reaching retirement age, a time when demand for health care increases (Feldstein, 1994). This group will increase significantly by the turn of the century and for several decades to follow (U.S. Bureau of Census, 1998). The elderly are a politically powerful group and it is expected that national policy will follow their desires for increased access to care (Beckel, 1999). All this is occurring at a time when payors are attempting to control costs. Increasing

healthcare costs, severe federal budget cuts, and market forces unwilling to support exorbitant health expenditures, combined with the additional demand of an aging population have created a tremendous strain on the country's health care system.

Throughout the past couple of decades, managed care organizations have developed and reinvented themselves to respond to the forces of the health care industry. These organizations range widely from managed indemnity plans to closed panel health maintenance organizations (HMOs). However, the theme of managing the access, quality and cost of health care is common among them all.

In addition, there is an expectation on the part of society for more medical services. In other words, there is an increasing demand for health services above and beyond those traditionally provided (Rohrer, 1998). Managed care is a health care delivery system which meets this demand as well (Olden, 1998). Managed care has been the industry's response to many of the environmental demands pressed upon it.

Managed care is currently the most widely used strategy to provide adequate cost controls and utilization incentives in the delivery of health care (Kirby, et al., 1998). It is an effort to obtain the "right" amount of care while keeping cost at a minimum. The premise for managed care is that the appropriate level and type of care to meet the needs of the patient are provided while simultaneously applying methods to provide that care in the most cost effective way possible. The traditional method of medical service reimbursement, fee-for-service (FFS), lacked the financial incentives to provide the appropriate level of care while utilizing the most efficient and effective methodology of care. FFS reimbursement failed to give providers, both facilities and caregivers, the incentive to use health care resources with regard to the type and amount of treatment

that would result in the desired affect and be most efficient and effective. Actually, under FFS, the more resources and procedures devoted to a case the more the provider would be reimbursed. Since managed care has shown that the quality of care and desired outcomes can be achieved with reduced utilization, more care than necessary may have been provided in the past (Kongstvedt, 1996; Clare, et al., 1995).

The literature has shown that managed care can sustain a high quality of care while reducing costs. One such study demonstrated that hospitals in high managed care states have a better cash position and have higher profitability than hospitals in low managed care states (Mowll, 1998). The study also demonstrated how facilities in high managed care states were more efficient, held a better financial position while experiencing no degradation in the quality or access to care (Mowll, 1998; Hospital and Health Networks, 1998).

There are three major approaches to managed care including health promotion, illness and injury prevention, and utilization management (Olden, 1998). Of these three methodologies, this paper will focus on the application of utilization management.

Utilization Management

Utilization management is managing the use of health care resources. It is used by HMOs and insurers to control the cost of care by ensuring the care given is necessary and follows accepted guidelines of quality and access to care. Hospitals use institutional utilization management in the same fashion in order to limit the expenses associated with a patient bed day at their facility, a practice significantly spurred by changes in reimbursement such as the prospective payment system (PPS) and capitation (Rutledge, et al., 1996).

There are numerous tools available in the process of managing health care resource utilization. These tools include, pre-certification, pre-admission testing, concurrent review, assigned lengths of stay, Utilization Management Nurses, Primary Care Providers or Intensivists assigned to individual patients or groups of specific case types, retrospective review, use of alternatives to acute care hospitalization, and use of outpatient procedures verses inpatient (Healthcare Financial Management, 1998).

The potential benefit of utilization management is its continuous goal of seeking the most efficient method of rendering care while maintaining high quality of care for the patient. More efficient delivery of care can result in the reduction of costs. There is the added benefit of providing the patient a continuum of care that is maintained from beginning of the clinical path to the end.

Studies have shown that utilization management reduces the per diem cost for inpatient care (Clare, Sargent, Moxley, & Forthman, 1995). It also lessens the length of stay per admission (Johnson, 1997; Rienhart, Anderson, Clay, Patrician, & Maloney, 1995). Utilization management ensures quality of care while simultaneously reducing overall costs (Hospitals & Healthcare Networks, 1998; Rienhart, et al., 1995), and decreases the chance of nosocomial infection (a complication which can significantly add to the length of stay and increase readmission rates).

One study, surveying all private hospitals in Baton Rouge, found controlling patient use of health care resources (utilization management) to have the highest rating of successful cost reduction over all other possible categories (Rutledge, 1996). Another survey has shown that HMO executives found strong utilization management and

economic incentives for physicians as the two most popular approaches to controlling hospital utilization (Kleiman, 1995).

Excess Capacity

Budget constraints, an ever increasingly competitive market, lower per hospital bed day reimbursement rates and the effects of utilization management have not only lowered costs but have significantly reduced the demand for inpatient beds. As a result, hospitals in high managed care states have lower occupancy rates (Mowll, 1998).

All hospitals are experiencing some degree of excess capacity. Their infrastructures no longer match the existing demand for inpatient care. There are an estimated 450,000 excess beds in the United States (Sopariwala, 1997). If health care facilities fail to tailor their capacity to meet decreasing demands, costs will be sustained while revenue gradually declines. The same expenses allocated to fewer beds result in a high per bed cost. In an increasingly competitive market, hospitals will not be able to compete if the cost of their product, inpatient operating beds is higher than competitors.

Prior to the 1970s, healthcare was essentially non-competitive. Reimbursements were on a cost-plus basis. Hospitals were designed and built in this competition free market environment. Hospitals experienced high profits and had no incentive to aggressively control costs or limit the utilization of health care resources. Physical and organizational structuring mirrored that style of operation (Ginter, Duncan, and Swain, 1996).

Now, with too many beds, occupancy rates are dropping significantly and hospitals find themselves struggling to reduce costs and establish a capacity that appropriately meets the demand for available beds. One study estimates inpatient days

will drop 34 percent from 1994 to 1999 (Dunn, 1996). Whether reimbursed on a per diem or capitated basis, hospitals must manage their expenses, as well as the care they provide, in order to be competitive and survive (Scott and Murphy, 1994).

Simply reducing the amount of services provided will only save a small amount through decreased use of medical supplies. As long as the infrastructure remains, the cost of unused capacity will remain high (Murphy and Murphy, 1996). A need for restructuring exists.

Restructuring

There are two ways of restructuring a hospital to address the decreasing demand for inpatient beds. One method is to expand services to utilize existing capacity. The alternative is to eliminate a portion of the facilities capacity and all possible expenses associated with those inpatient beds.

Expansion can be the more difficult of the two methods. In the highly competitive healthcare market, expansion is risky and it is difficult to identify a profitable niche. It may also require a great deal of a hospital's limited financial resources (Gapenski, 1996). At best, expansion may involve some type of merger or joint venture that some facilities are reluctant to do.

The second method, reduction of capacity, is the method most used by hospitals to cut inpatient expenses (Dunn, 1996). It holds less risk but still requires a high level of intensive management to ensure its benefits are fully realized. Of the expenses effected by inpatient capacity reduction, personnel salaries (particularly nursing staff) are by far the greatest portion. One of the difficulties involved in the reduction method is

maintaining an appropriate full-time equivalent [FTE] to case mix-adjusted admissions ratio (Robertson, Dowd, & Hassan, 1997).

A reduction strategy means staff reductions. One significant difficulty hospitals have in the management of personnel reduction is the method used to determine where cuts should be made. One of the most common methods, used frequently by the MHS, is an across-the-board cut made in all work centers of the organization. The cuts are made regardless of the level of efficiency, revenue production or support a work center provides. This method is seen as a fair share, "everyone suffers together", approach to restructuring downward (Murphy, et al., 1996). The problem with this method of reduction is that quality of care is often reduced, employee moral drops, staff turnover increases and the organization saves very little money (Murphy, et al., 1996).

An alternative method to reduce staffing is to perform a thorough work process, job role and work center analysis of the entire organization. The impact of decreased demand for inpatient services varies throughout a health care organization. By examining each work center and thoroughly performing a job analysis, cuts in staff can be made in areas that will maximize cost savings. In addition, areas that may require an increase in staff can be identified and personnel can be transferred instead of being laid-off. More focus can be given to revenue making work centers or those that support them. Sound planning and informed decision making must be made in each phase of the restructuring process (Lumsdon, 1995; Murphy, et al., 1996).

The Military Healthcare System is not immune to the effects of severe budget cuts, managed care through utilization management, and the resulting reduction in demand for inpatient services. Although the MHS has had a longer path to take to get to

the same level of managed care as its civilian counterparts, it has met those challenges with significant managed care initiatives (Reinhart, et al., 1995; Texidor, et al., 1996).

In addition to the modifications necessary to track costs, quality and access to care, the MHS has unique confounding factors. They include: continually rotationing staff (especially at the senior staff level), an equally transient beneficiary population, and an uniquely military primary mission of medical readiness. There is an additional benefit, however, which the Department of Defense enjoys as a result of utilization management. It realizes cost savings through a more rapid treatment process, getting uniformed personnel back in a duty status in less time than in the past.

The MHS has made tremendous strides in the implementation of managed care initiatives, and currently operates a system called TRICARE. TRICARE represents one of the largest health care systems in the United States. It serves a beneficiary population of approximately eight million located around the globe. The military treatment facilities still serve as the cornerstone of their health care system. In addition, large geographical regions, 11 in total, have networked with manage care support contractors. These contractors provide medical benefits the military infrastructure is unable to (TRICARE Southwest and Foundation Health Federal Services, Inc, 1998).

In its efforts to control costs, the MHS has embraced many forms of utilization management (Reinhart, et al. 1995). As with its civilian counterparts, the MHS is experiencing excess capacity and is having to restructure its facilities in order to maintain efficiency. The additional factor of U.S. military forces downsizing over the past decade have also added to the need to restructure as well.

The restructuring that has occurred has been on both a facility and system level. Ward closures and resource sharing have occurred at local and regional levels. Restructuring and closure of selected medical facilities have occurred through Department of Defense and congressional direction. The result has been a downsizing of medical centers to community hospitals, and hospitals to large clinics. There have also been numerous hospital closures.

In the San Antonio area, there are two military medical centers, Wilford Hall Medical Center (U.S. Air Force) and Brooke Army Medical Center (U.S. Army). WHMC is the largest and oldest of the two facilities. Its original structure was built in 1963. It employs a staff of over 5000 military and civilian personnel and has an operating bed strength of 288. It experiences approximately 24,000 admissions per year and provides more than 135 different specialty and subspecialty services (WHMC Beneficiary Guide, 1997).

d. Purpose

The study hypothesis is WHMC has aggressively applied utilization management techniques to its inpatient operations which has resulted in successfully reducing inpatient utilization. Due to the successful reduction, it is further hypothesized that there was a resultant excess inpatient capacity and WHMC has had to perform restructuring strategies in order to adjust to the drop in demand for inpatient services.

Additionally, I hypothesize that due to the complex and cumbersome process for restructuring billet assignments in the military, staffing levels have lagged behind the restructuring efforts made by the medical center.

Method and Procedures

This study has examined the expense and resource data of WHMC through several information systems. The study sought to determine if inpatient demand has truly decreased. In addition, this study sought to determine the impact of any inpatient demand changes and how the facility responded to those forces. The study also examined to see if efficiencies and cost containment had been the result of the facilities restructuring efforts over the past three years.

The study also determined if utilization management efforts have decreased the average length of stay, modified the case mix index, and reduced cost per inpatient bed day. This information will help in providing recommendations to further enhance the medical center's goals of providing high quality of health care while using its limited resources efficiently.

The data for this project came from mainly three sources, the Medical Expense Performance Reporting System (MEPRS), the Retrospective Case Mix Analysis System (RCMAS), and the Workload Management System for Nursing (WMSN). The data was pulled via a collective information system called the Corporate Executive Information System (CEIS). Access to the CEIS was provided through the information systems office of TRICARE Southwest. In addition, specific MEPRS data was gathered from records held in Wilford Hall Medical Center's Decision Support Office. Data from these systems was collected covering several different periods of time, dependant upon the system used and the type of data collected. Generally, the goal was to collect data from nine specific quarters, beginning with the first quarter of 1997 and continuing through the first quarter of 1999.

The CEIS system provided the data to assess the level of inpatient bed days over the studied period. The information obtained included, patient category, number of dispositions by product line, cost of dispositions, cost of bed days and the location of the referring catchment area (home site of the patient).

The identification of the source (location) of the patient is needed due to the confounding factor of changes in the Department of Defense's policy on distance allowed for referred patients. The current policy, effective fiscal year 1998, lowered the length of travel a patient must go to receive medical services within the military system (local civilian services would be sought when the maximum distance is exceeded). Removing the patients referred to Wilford Hall from outside its catchment area should remove the effect on lowered demand due to the referral policy change.

The CEIS system was also used to identify Case Mix Index changes of patients seen at WHMC. The same system provided data to determine Average Length of Stay (ALOS) and per disposition costs. Each data set will be separated out by beneficiary category, as well as, by service category. Table 1, below, provides a list of the different patient categories discussed in this study.

Table 1

Beneficiary Categories

Active Duty	Active Duty Family Member
Retiree	Retiree Family Member
Guard/Reserve	Survivor
All Others	

Table 1: Major beneficiary categories within the Department of Defense.

In addition to several beneficiary categories, there are a number of service categories that are referred to throughout this study. Table 2, below, provides a list of those categories.

Table 2

Service Categories with MEPRS Labels

AA – Medical Service	AD Pediatric Service
AB – Surgical Service	AE Orthopedic Service
AC – Obstetric Service	AF Psychiatric Service

Table 2: MEPRS major patient care service categories.

Finally, the quarterly data from MEPRS was used to determine average cost per bed day by service line. Quarterly data was used to provide enough data points to identify trends in these figures. A trend analysis was applied to determine if costs have decreased, remained flat or risen. If the trend indicates costs have remained the same or lowered, it would suggest that WHMC has effectively managed its excess capacity. If costs are rising, a further break down of the types of costs used in MEPRS data is needed to see in which category costs are increasing. A correlation of the individual cost data with the overall costs will be used to determine if the increase is due to FTEs or some other type of cost.

The term disposition used throughout this paper is used to refer to an admission and consequential discharge of a patient. The term was consistently used over the more common term of admission throughout the reports and systems used in this study. The systems are programmed to use disposition to reflect the completion of an inpatient stay.

The data obtained from the information systems used in this study is not verifiable, however, due to the consistency of regulations, the standard application of these systems, and the labeling of categories applied, the validity of the data is assumed.

Although the data is grouped in different periods of time, the calculations made were based on matching data to maintain interval consistency. As with the assumption of validity due to the nature of the data and the systems from which they were obtained, the accuracy and consistent definitions are assumed. In addition, when dealing with specific groups of services or beneficiaries, sampling was not done due to the fact that the entire population set was considered throughout each step of the analysis. Therefore, as with validity, reliability is high.

Results

The data indicate that Wilford Hall Medical Center has experienced a decrease in inpatient operations. The level of dispositions has decreased in every major patient category and service. Over the period covering the first quarter of 1997 to the first quarter of 1999, annual dispositions have decreased from 21,945 per year to 15,063. As seen in Figure 1, the number of dispositions has fallen from nearly 7000 per quarter to less than 4000 or approximately 45%.

The total decrease is a result of a drop in every inpatient service category except pediatrics. There are two service categories that represent the most significant decrease in dispositions, surgery and medicine. They account for 83.5% of the decline in total dispositions. The surgical category has dropped 135 dispositions per quarter or nearly 70%, and the medical category has decreased by 55 dispositions per quarter or 35%, refer to Figure 2.

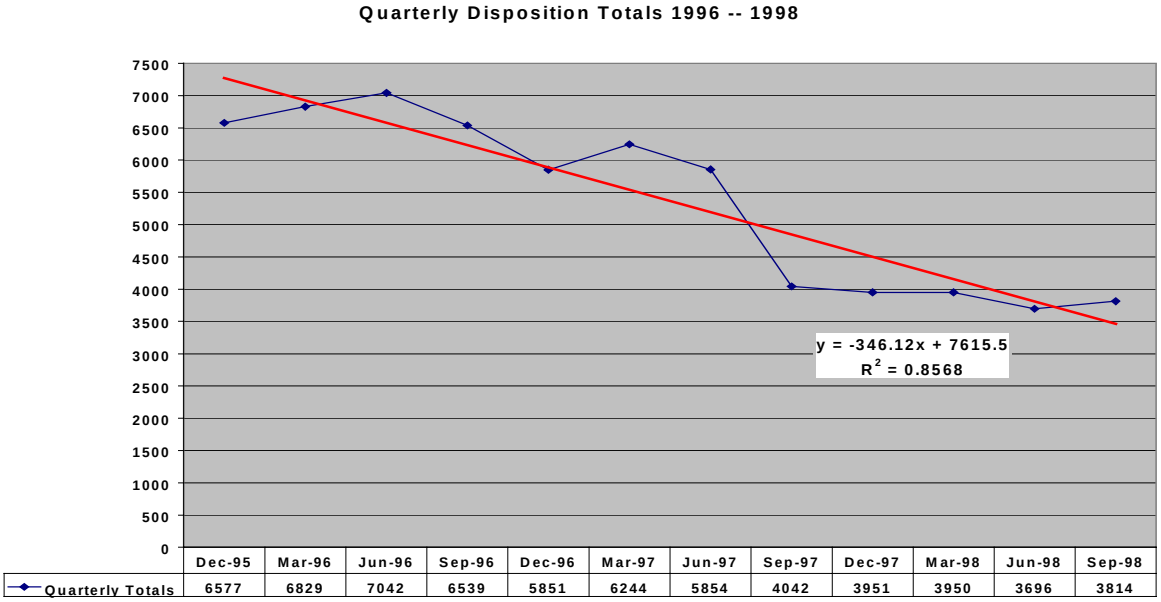
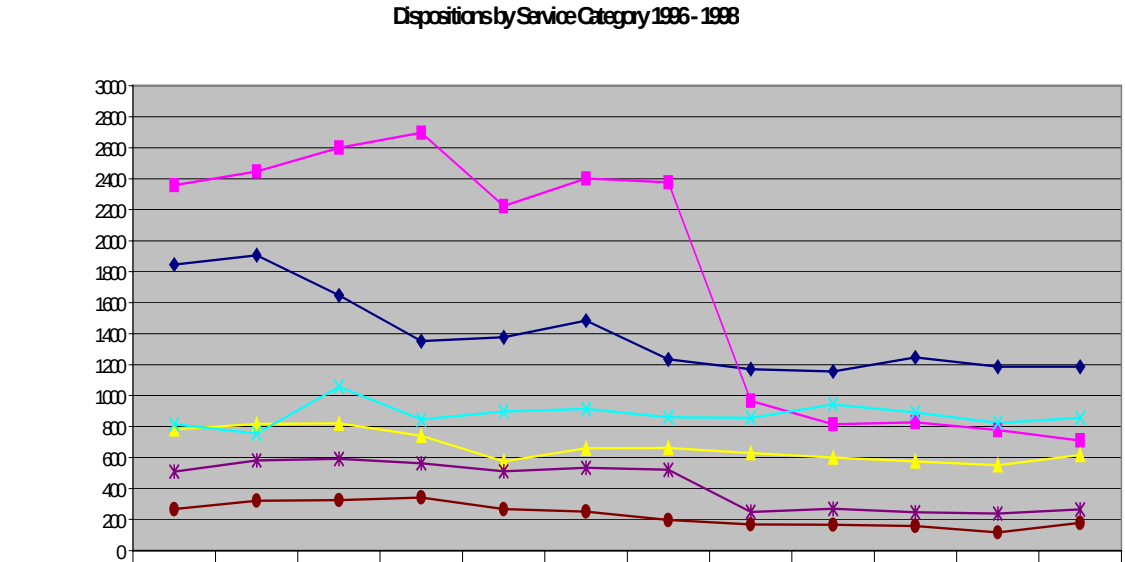


Figure 1. Number of total dispositions per quarter, from the first quarter of 1996 through the fourth quarter



	Dec-95	Mar-96	Jun-96	Sep-96	Dec-96	Mar-97	Jun-97	Sep-97	Dec-97	Mar-98	Jun-98	Sep-98
AA Medical	1845	1906	1647	1352	1375	1484	1233	1172	1156	1247	1187	1186
AB Surgical	2368	2447	2601	2696	2223	2402	2377	966	814	828	777	710
AC Obstetrical	783	816	820	741	577	660	664	630	601	577	551	618
AD Pediatric	814	757	1057	845	898	914	861	856	944	891	825	856
AE Orthopedic	509	581	591	562	511	535	521	250	269	247	238	266
AF Psychiatric	268	322	326	343	267	253	198	168	167	160	118	178

of 1998.

Figure 2. Quarterly dispositions categorized by general inpatient service type for the first quarter 1996 through the fourth quarter 1998.

The categories of obstetrics, orthopedics and psychiatry services have fallen 21.0%, 47.7% and 33.6%, respectively.

The confounding factors, including, the DoD referral policy change, a change in the size of the beneficiary population, and the changing patient category mix of the population in the local catchment account, in part only, for the decline in dispositions.

One confounding factor was the impact of the DoD referral policy changes in respect to the distances and lengths of time a referred patient may endure before civilian care can be sought. The data shows that in a two year period, from the first quarter 1997 through the first quarter 1999, inpatient dispositions referred to WHMC from outside the WHMC and BAMC catchment areas decreased from over 1000 dispositions per quarter to less than 600 or 58.2%, see Figure 3 below.

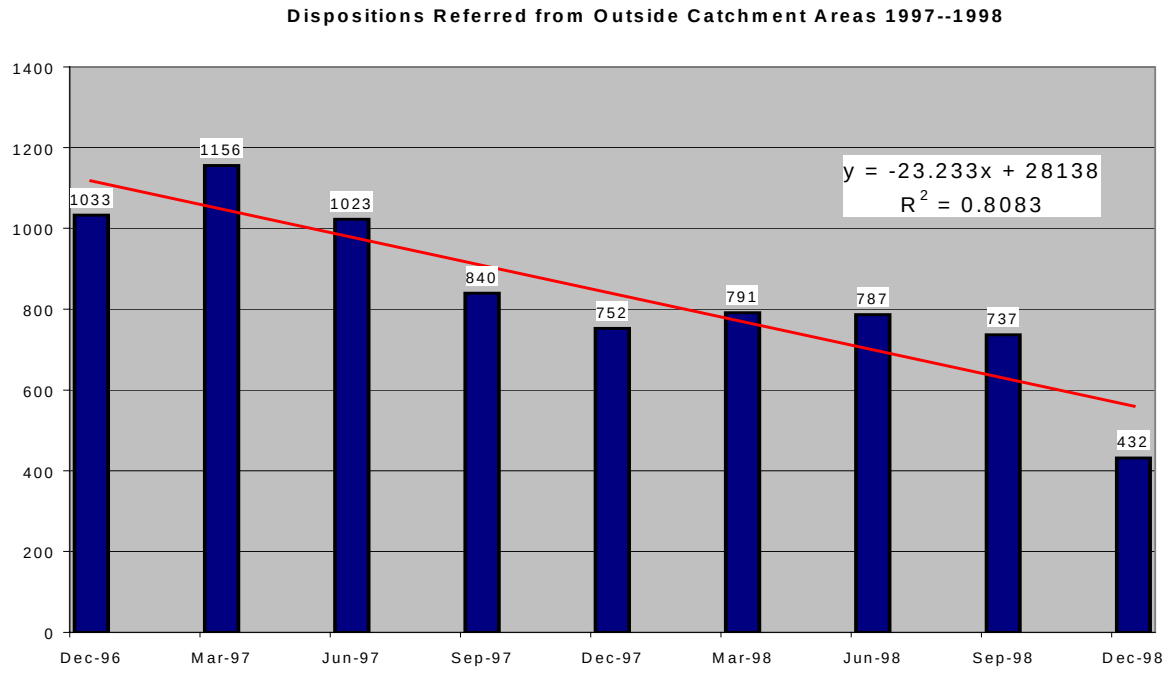


Figure 3. Total dispositions by quarter referred to Wilford Hall from outside local catchment areas, from the first quarter 1997 through the fourth quarter 1998.

The correlation between the decrease in outside catchment area referrals and the change in total dispositions is a Pearson's R of .977. The decline in outside catchment area referrals accounts for 42% of the overall decrease in total dispositions, using averaged figures per quarter for both referred dispositions and total dispositions.

Figure 4 below illustrates the proportion of dispositions by catchment area source over the past nine quarters.

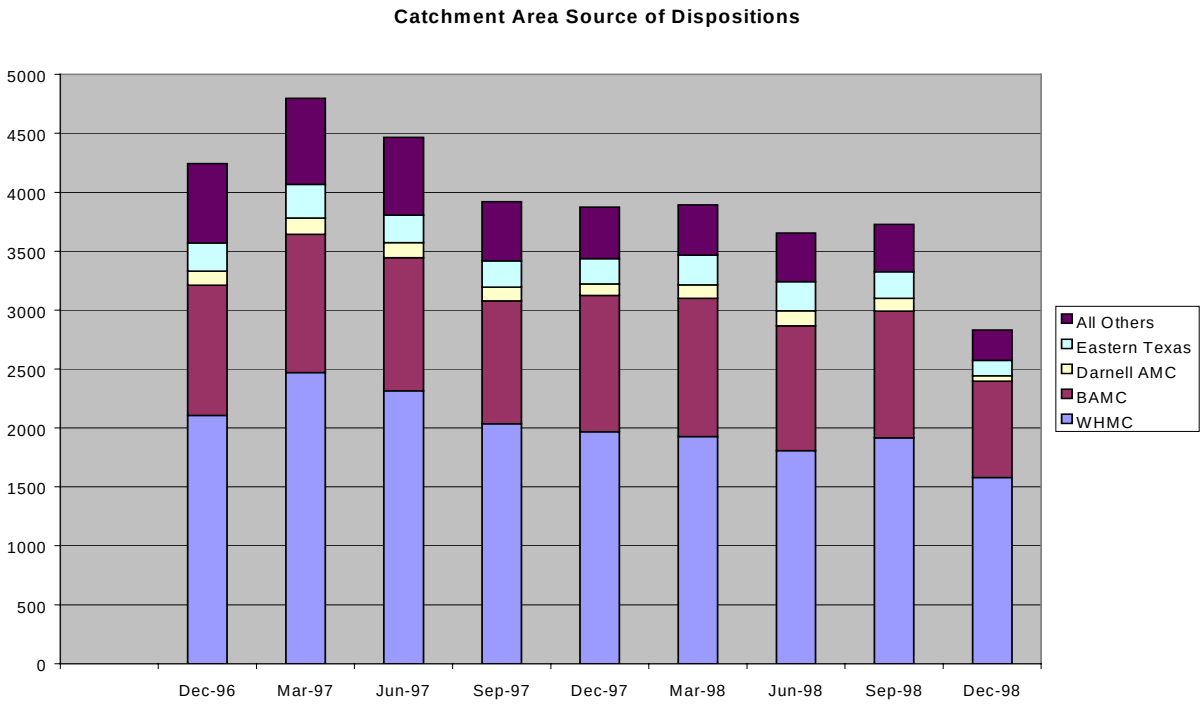


Figure 4. Total dispositions categorized by catchment area source.

Another confounding factor to address is the changing size of the beneficiary population within the catchment areas from which patients are normally referred to Wilford Hall, regardless of the change in the DoD referral policy. The total beneficiary population has changed from 188,373 in 1997 to its current number of 186,026, a 1.3 %

decline. Individually, Wilford Hall had a decrease of 1.92%, while BAMC experienced a .71% loss.

In addition to total population changes, there has been a confounding factor of a change in the patient category mix. Within the two catchment areas considered local, Wilford Hall and BAMC, the beneficiary categories of Active Duty and Active Duty Family Members have dropped from 75,972 in 1997 to 70,848 in 1999, a drop of 6.75%. The Retiree and Retiree Family Member beneficiaries have had a 1.8% increase in the same period, from 102,115 to 103,951, see figure 5 below. The projected figures for calendar year 2000 are included to illustrate the current trend.

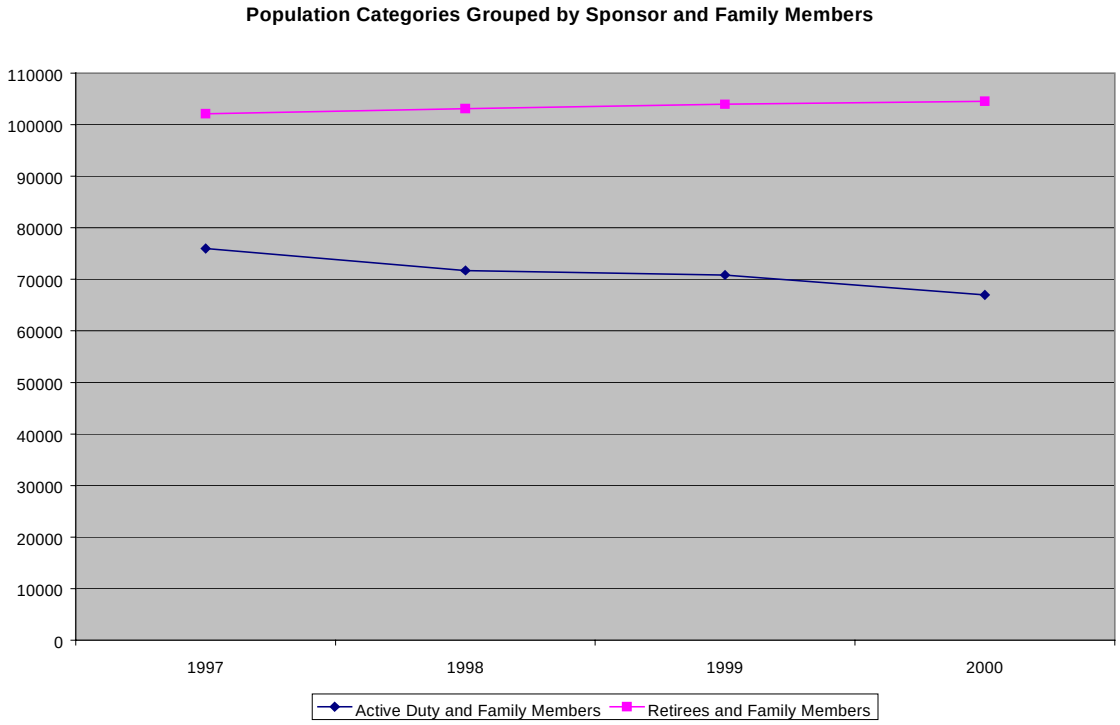


Figure 5. Population totals for Active Duty and Retiree beneficiary categories combine with perspective family member category.

Retirees and their family members now exceed the number of Active Duty beneficiaries and their families by over 33,000, or 47%. The below graph provides a breakdown of each beneficiary category.

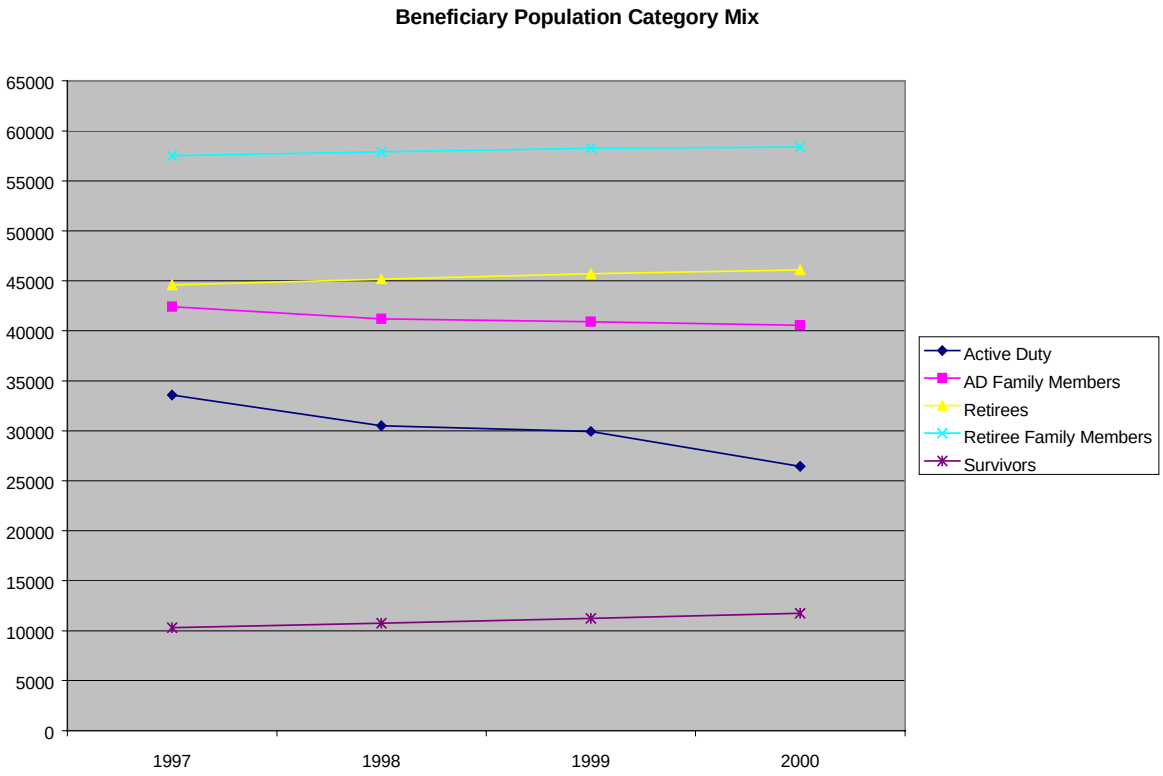


Figure 6. Historical population totals, by beneficiary category, for 1997 through 1999 and forcasted for 2000.

Collectively, these confounding factors have had an impact on the number of dispositions experienced at WHMC. However, the significant decline experienced has also been the result of internal management decisions. Over the past four years, Wilford Hall has dropped from 21 units, including intensive care, same-day surgery, and post anesthesia units, to 15. These closures, and/or mergers of units, requires a significant organizational and resource restructuring and are techniques associated with sound utilization practices.

With the realization of significant declines in inpatient operations, this study further researched to see if the level of expenses associated with inpatient operations have followed the decline of dispositions. Throughout the period of decreasing dispositions,

Wilford Hall experienced a decrease in its total costs for inpatient operations. Total costs have dropped 33.5% or over $55 million in the last four years, see figure 7.

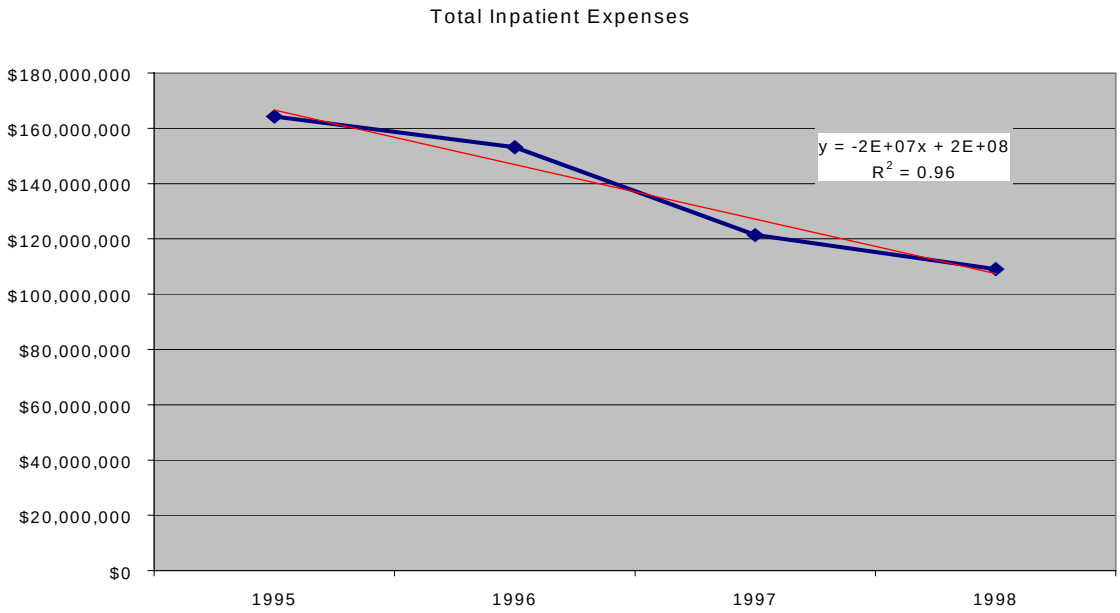


Figure 7. Total Inpatient Expenses for Wilford Hall Medical Center to include Direct, Ancillary and Support costs.

The costs per disposition and operating bed day (OBD) have, however, increased over the same period of time. The cost per disposition has increased across all service types, see Figure 8.

The overall monthly average for dispositions was $5,582.94 in 1996. The average has jumped to nearly $7,000.00 per disposition for 1998, an increase of 25.4%. The correlation between the number of quarterly dispositions and the costs per disposition is a Pearson's R of .914. The cost per occupied bed day has risen from $1,309.03 in the second quarter of 1996 to $1,639.78 in the last quarter of 1998.

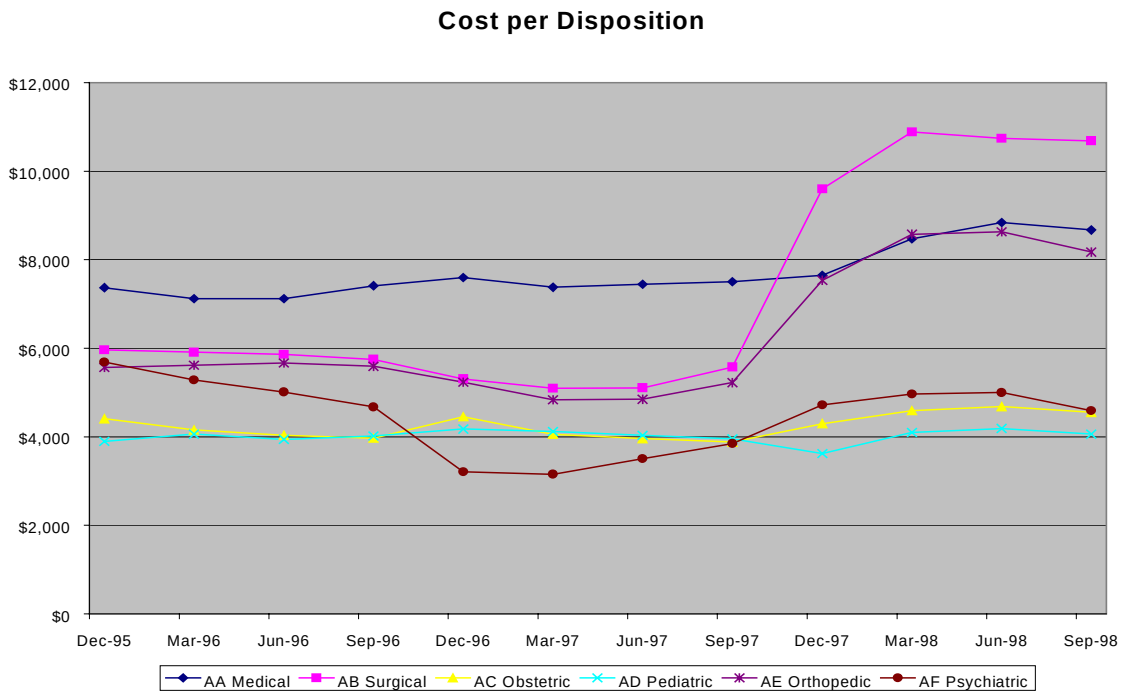


Figure 8. Total costs per disposition separated by service category.

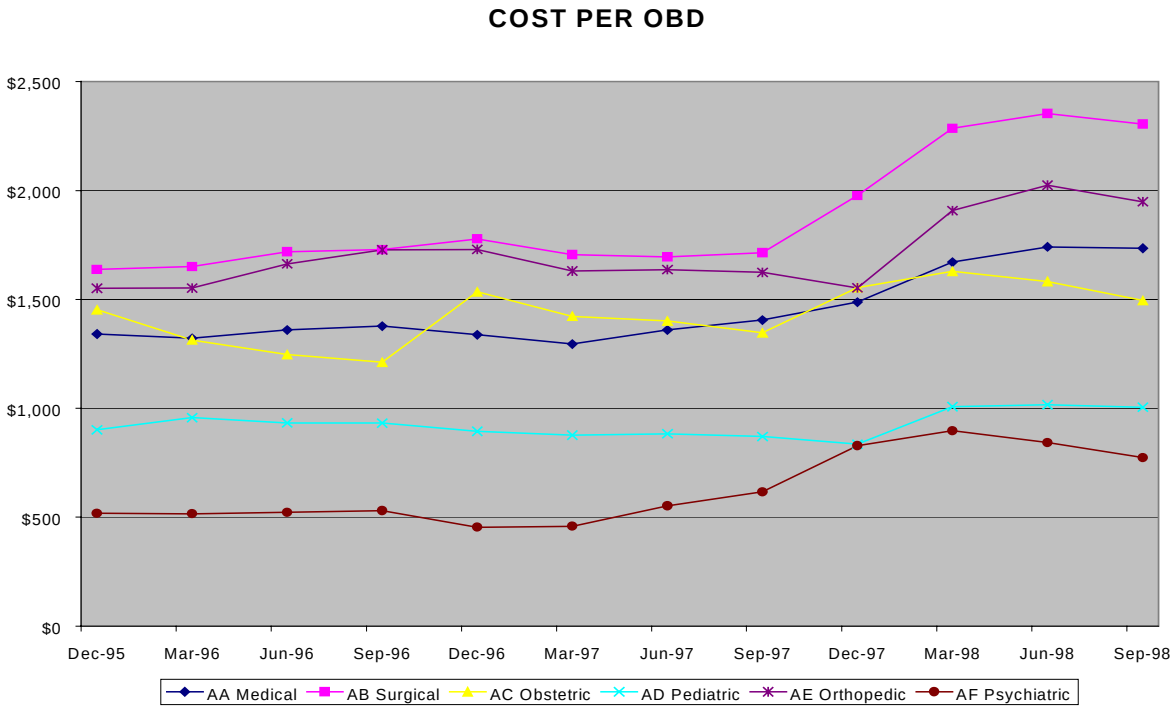


Figure 9. Costs per Operating Bed Day by service category.

Figure 9 above illustrates that the two service categories that have experienced the greatest per disposition cost increase were surgery and orthopedics. Both categories

experienced a significant decrease in dispositions over the past three years. In fact, every other service category, excluding pediatrics, has had an increase in per disposition costs while decreasing in number of dispositions. Although pediatrics has shown an increase, its costs have increased as well. The increase in costs could be the result of having fewer, but more intensive, patients. The data, however, does not support that assumption.

The Case Mix Index (CMI) data indicates that the cumulative CMI, as well as the CMI for each individual service category, there has been a small but distinctive decline. Over the past nine quarters, the accumulative CMI dropped from 1.24 to 1.20.

The following sets of graphs illustrate, in every major patient category, how inpatient dispositions have dropped while the CMI has also lowered. The first category shown is Active Duty personnel, figure 10. The number of dispositions dropped by approximately 300 over the nine-quarter period or nearly 42%. Simultaneously, the Active Duty CMI lowered from 1.06 to .98.

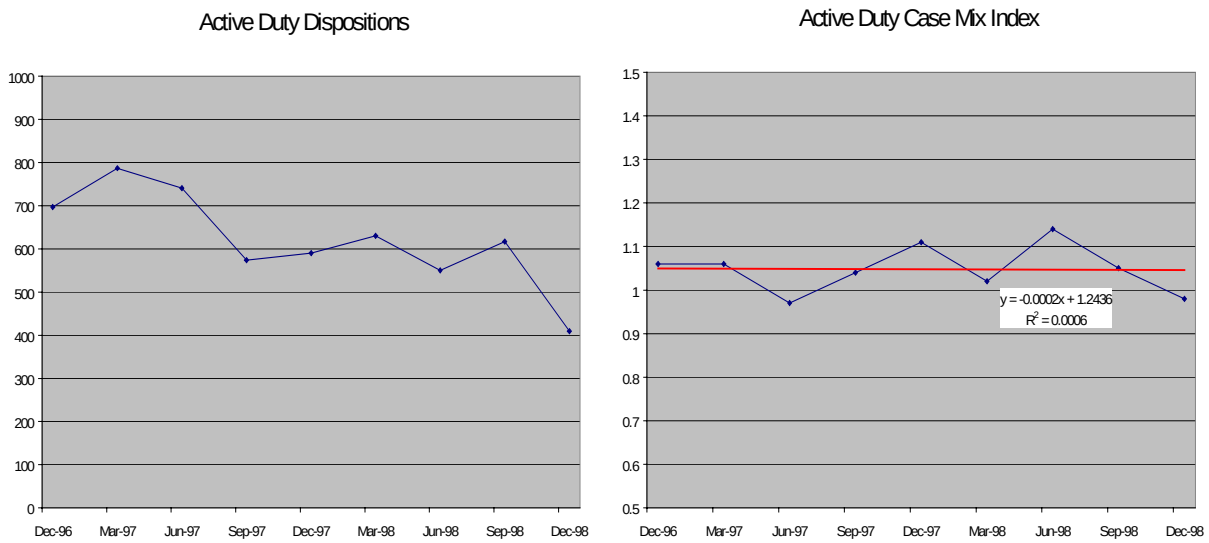


Figure 10. Active Duty beneficiary category quarterly disposition totals and average Case Mix Index for fiscal years 1997 and 1998.

As with the Active Duty category, Active Duty Family Members' CMI lowered at the same time its dispositions were dropping. The number of dispositions was slightly higher than the Active Duty category, approximately 400 over the same period. However, the rate of change was 25%. The decrease in CMI was equally as strong, from 0.82 to 0.71, see Figure 11 below.

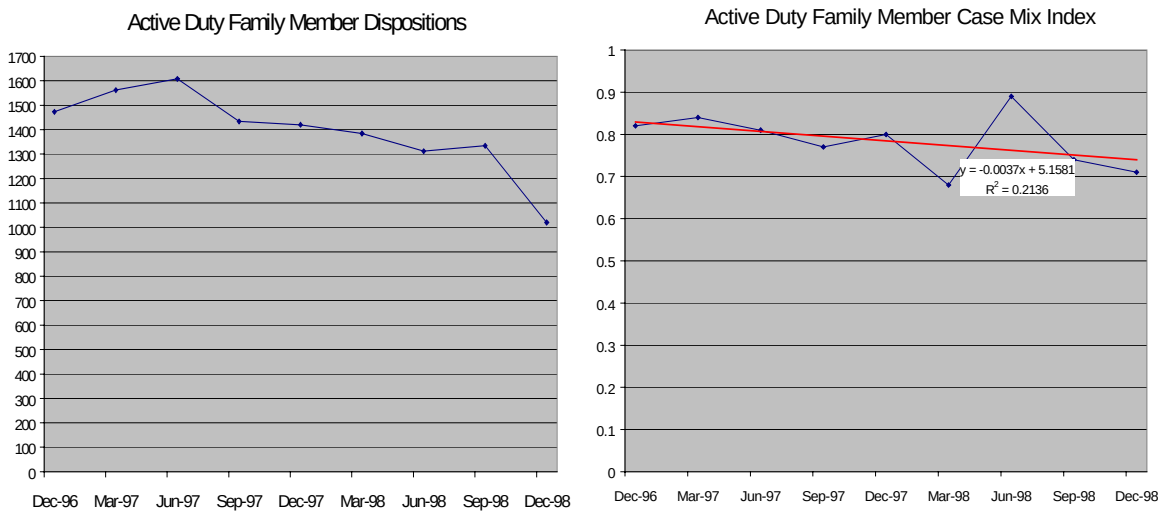


Figure 11. Active Duty Family Member beneficiary category quarterly dispositions and average Case Mix Index for fiscal years 1997 and 1998.

Both Retiree and Retiree Family Member categories experienced declines in both quarterly dispositions and their CMIs but at a lower rate than the Active Duty and Active Duty Family Member groups. The quarterly dispositions for the Retiree category were reduced by approximately 300 per quarter or 30%. The CMI dropped from just over 1.70 to just below 1.70, see chart below.

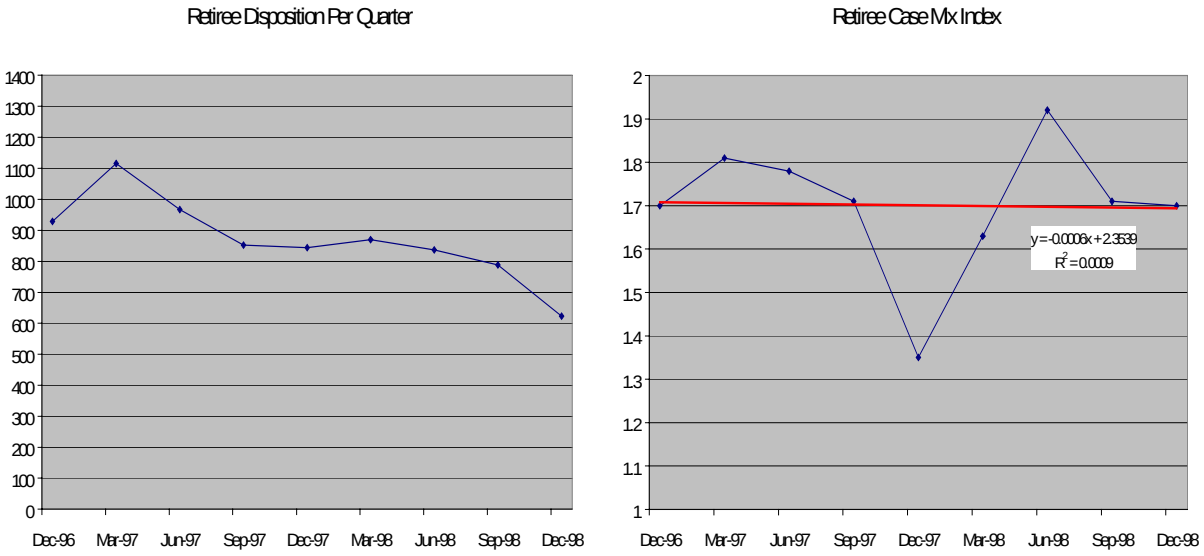


Figure 12. Retiree beneficiary category quarterly dispositions and average Case Mix Index from the first quarter 1997 to the first quarter 1999.

The data indicates that, similar to the Retiree category, the Retiree Family Member category had a decrease of nearly 300 dispositions per quarter or approximately 35%, see figure 13. The CMI for Retiree Family Members dropped from 1.39 to 1.32.

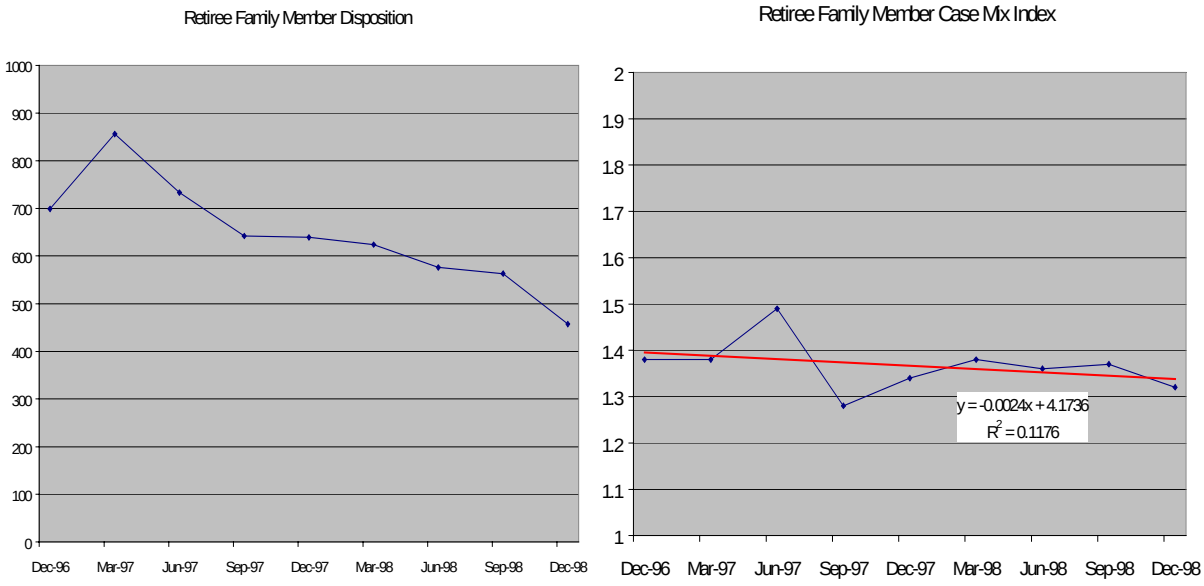


Figure 13. Retiree Family Member Beneficiary category quarterly dispositions and average Case Mix Index from the first quarter 1997 through the first quarter 1999.

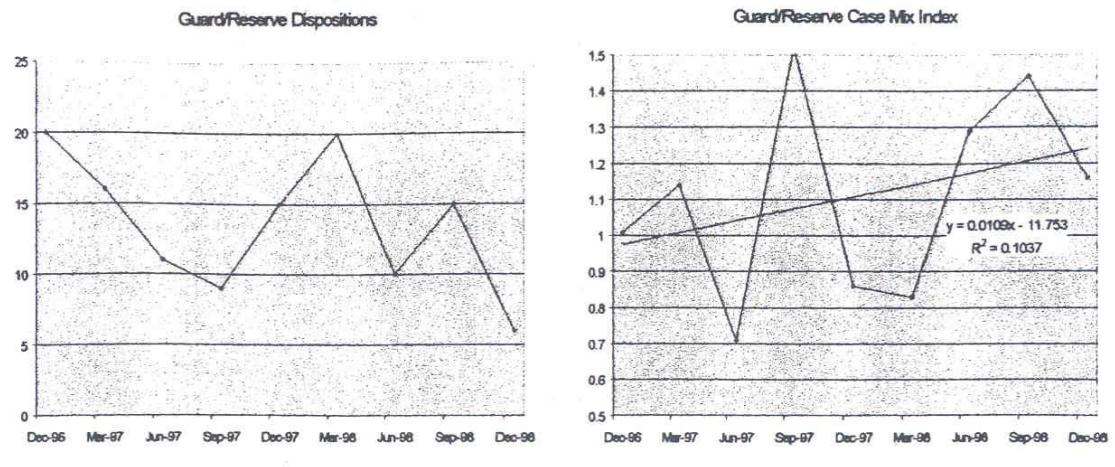


Figure 14. Guard/Reserve beneficiary category quarterly dispositions and average Case Mix Index from the first quarter 1997 through the first quarter 1999.

Of the Survivor, Guard/Reserve and All Other categories, only the Guard/Reserve group demonstrated an increase in CMI. As figures 14 and 15 illustrate, since the Guard/Reserve category data reflects such a small number of dispositions, the data points are erratic and represent no significant impact on inpatient costs.

Survivor and All Other categories, as with the major categories, experienced a gradual decline in dispositions while simultaneously having a decrease in CMI. Although these categories are relatively small, together they represent approximately 300 to 400 dispositions quarterly.

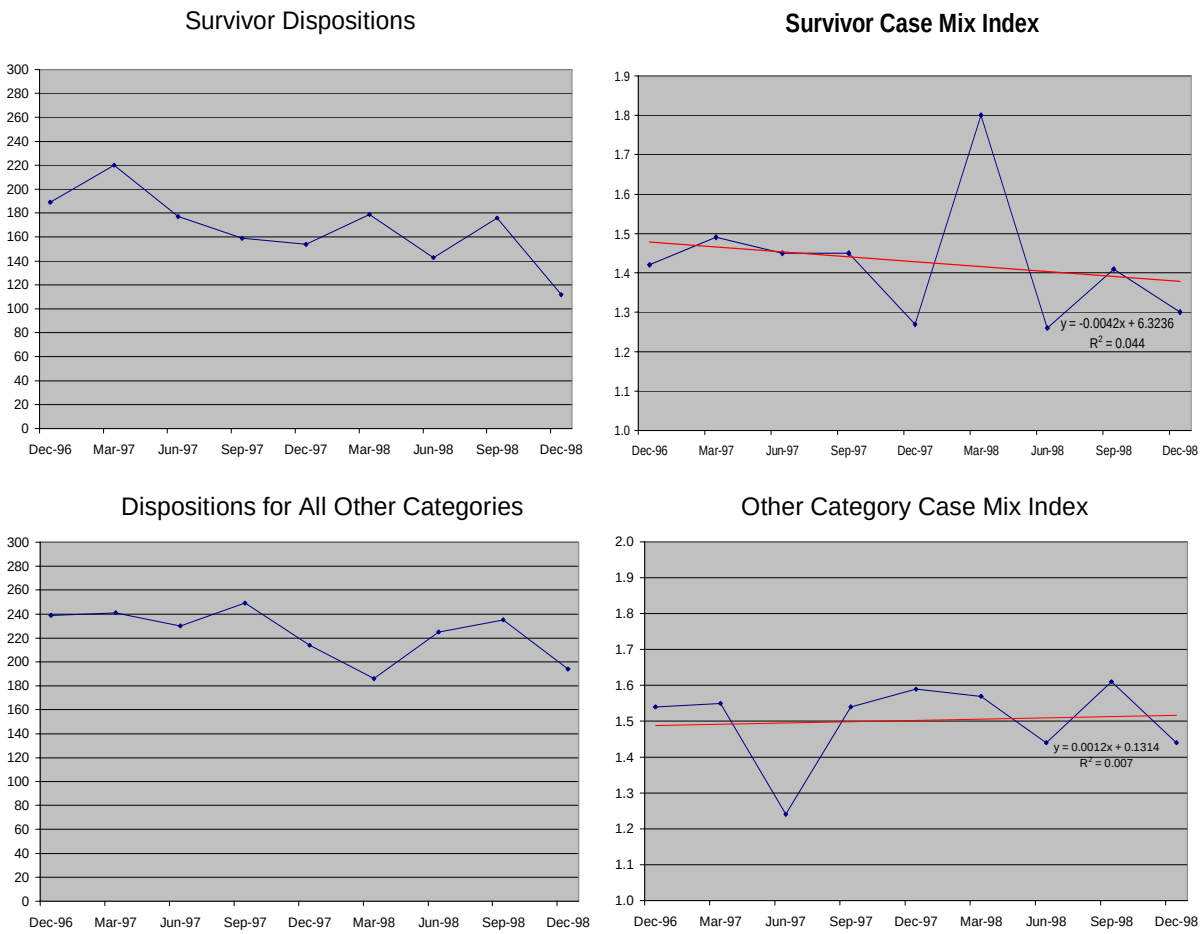


Figure 15. Survivor and All Other beneficiary category quarterly dispositions and average Case Mix Index from the first quarter 1997 through the first quarter 1999.

The average length of stay (ALOS) was examined to see if the rise in per disposition cost was due, at least in part, to an increase in the time patients remained in the hospital per admission. The increase in costs per disposition was not due to an increase in Average Length of Stay (ALOS). Over the study period, the average length of stay (ALOS) has dropped from a cumulative average of 4.70 days to 3.79 days, see Figure 16 below.

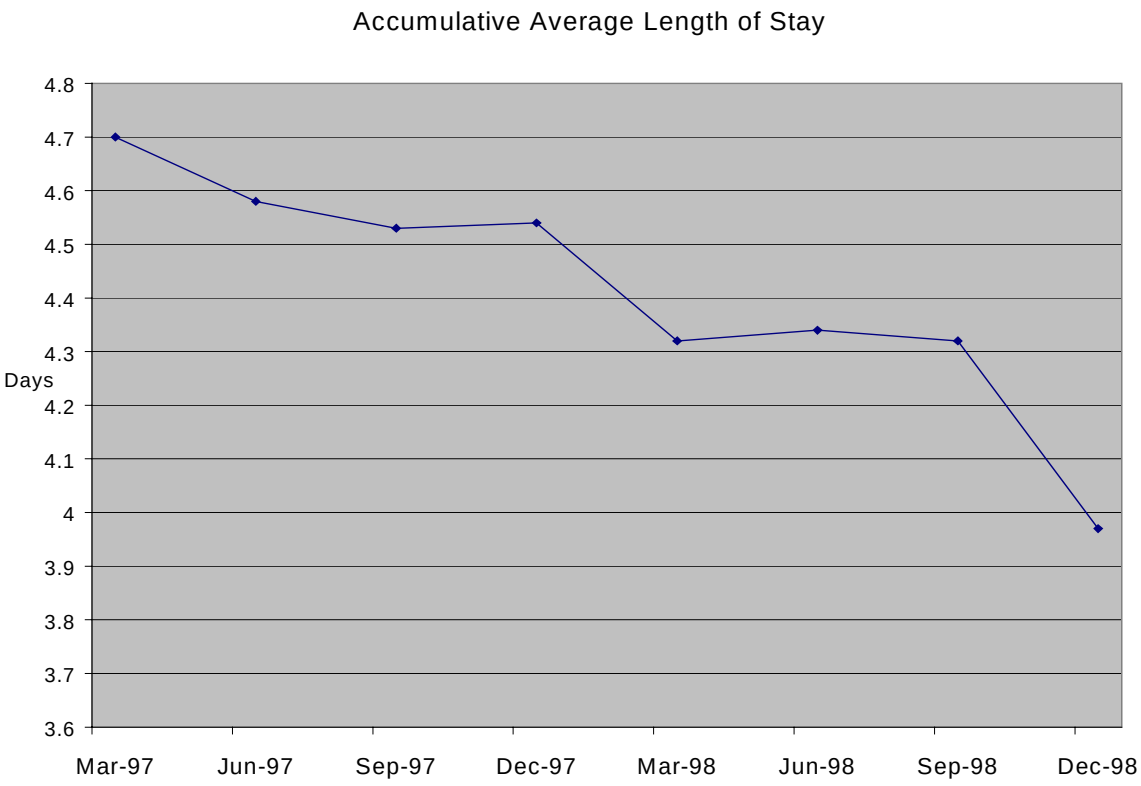


Figure 16. The Accumulative Average Length of Stay for all dispositions from the second quarter 1997 through the first quarter 1999.

As shown above, the overall ALOS has decreased by nearly one full day. The only category not to experience a drop in ALOS was the Other category. The two categories with the most significant decline was Active Duty and Retiree Family Member.

The MEPRS data shows that total cost for inpatient operations have dropped over 33.5% the last four years. The ratio of direct costs of inpatient services to total cost have remained stable over this period, from 20.4% in 1995 to 20.5% in 1998. Total inpatient costs have dropped over $55.1 million in this period of time. However, the majority of the decrease in costs, $44.0 million, is due to reductions in support and ancillary costs distributed to inpatient operations. While the overall costs have dropped 33.5%, the

direct costs have maintained a similar rate of decline at 33.2%. The largest reduction in costs was in Support Services, declining 51.8%, see figure 17 below.

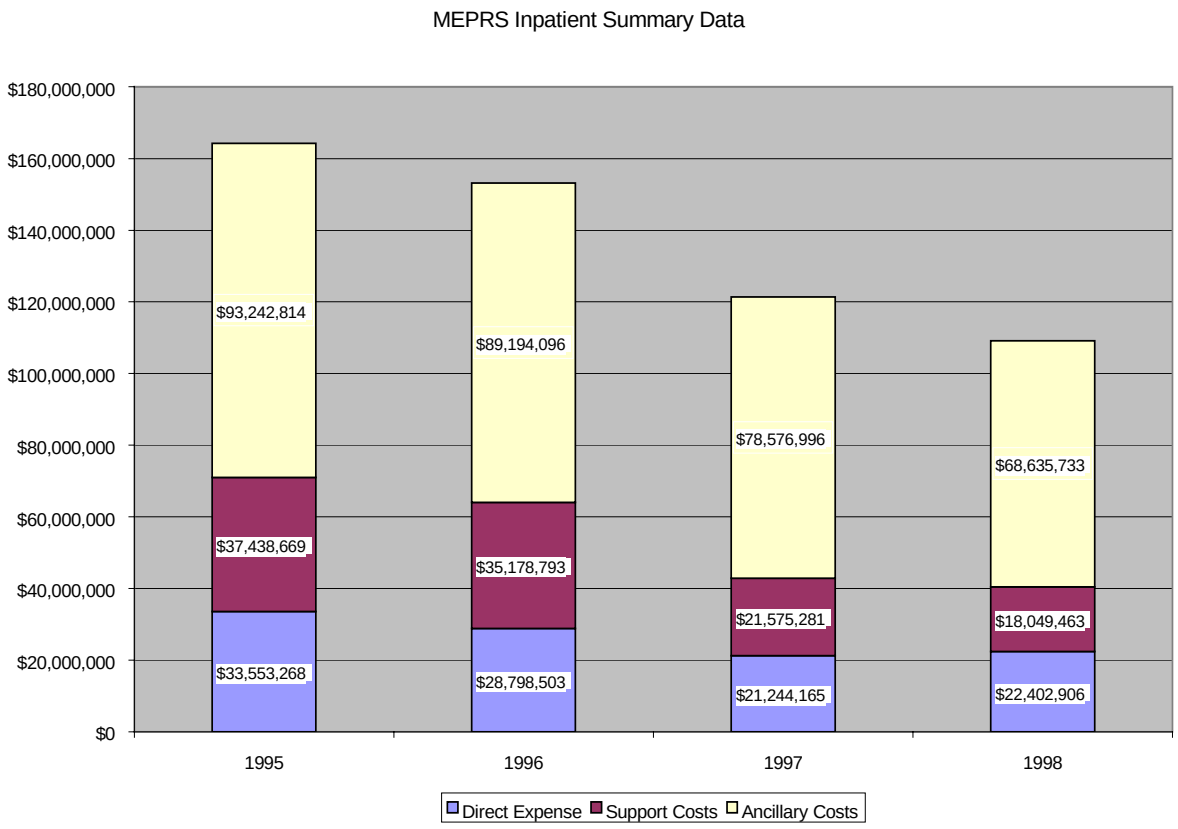


Figure 17. Total Inpatient Costs, broken down by major expense categories, for fiscal years 1995 through 1998.

The data on specific direct costs for inpatient expenses indicate that although inpatient personnel expenses have been declining over the past four years, inpatient expenses other than salary (financial/supplies) have gradually risen, see figures 18 and 19.

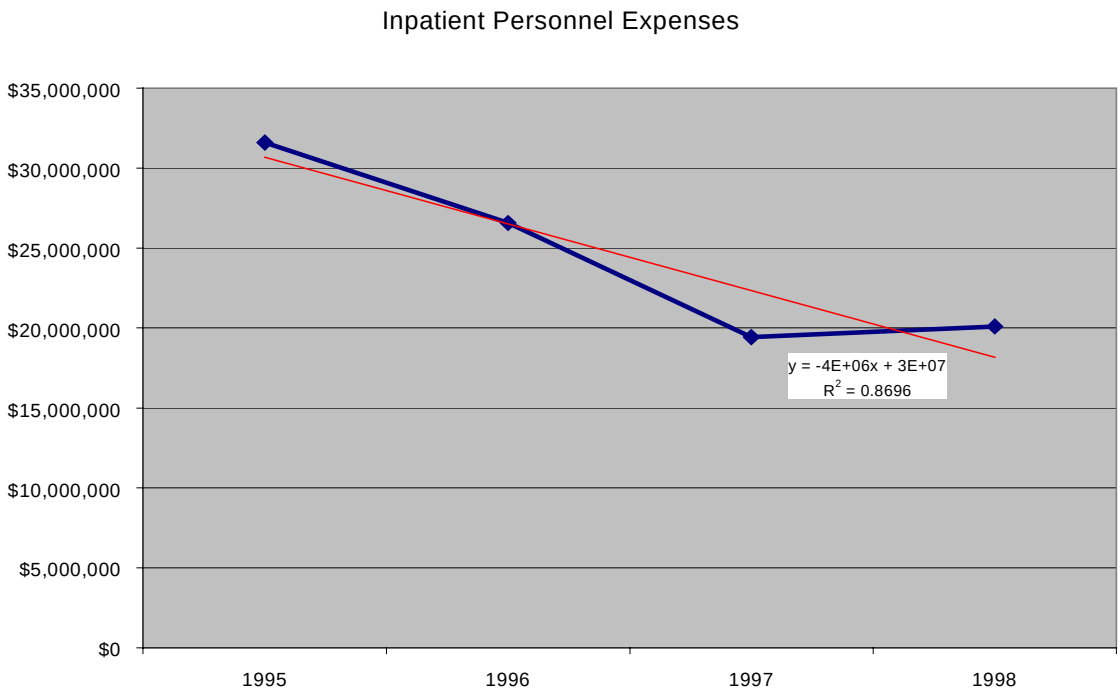


Figure 18. Total Inpatient Personnel Expenses for fiscal years 1995 through 1998.

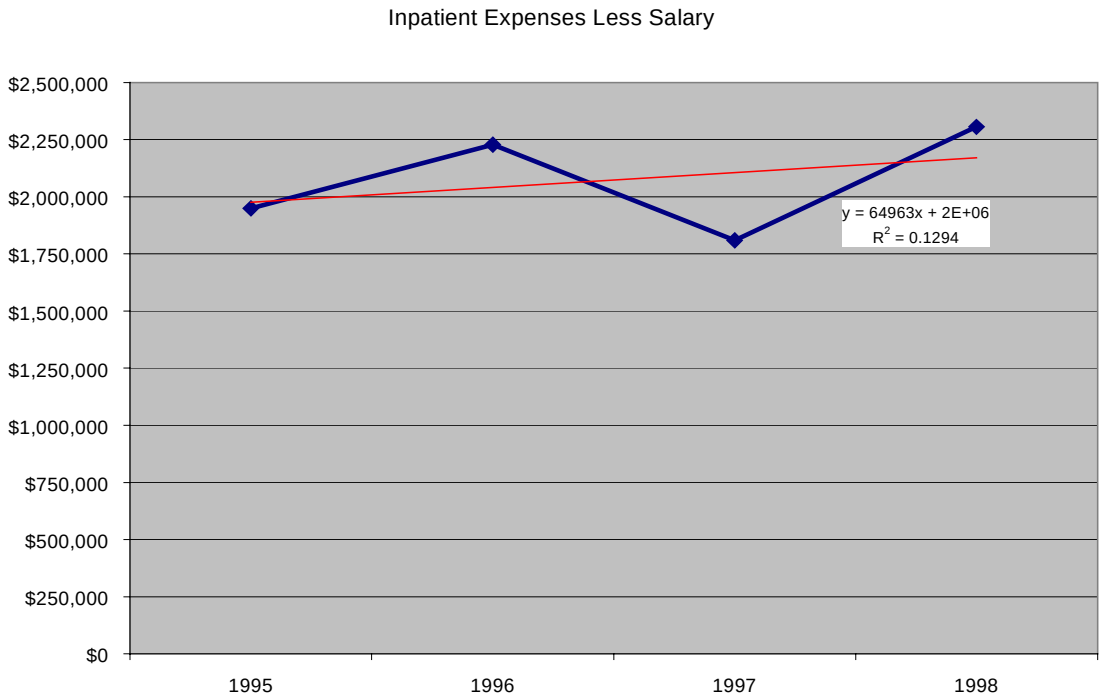


Figure 19. Total Inpatient Expenses Less Salaries for fiscal years 1995 through 1998.

The overall expenses for the Wilford Hall Medical Center has continuously decreased over the past four years, a total decline of $51.4 million or 13.8%. This decrease is less

than the $55.1 million decrease in total inpatient costs experienced over the same period, see Direct Expense Summary Report, Figure 20 below. Table 3, below, provides the MEPRS costing account labels and the types of costs they represent.

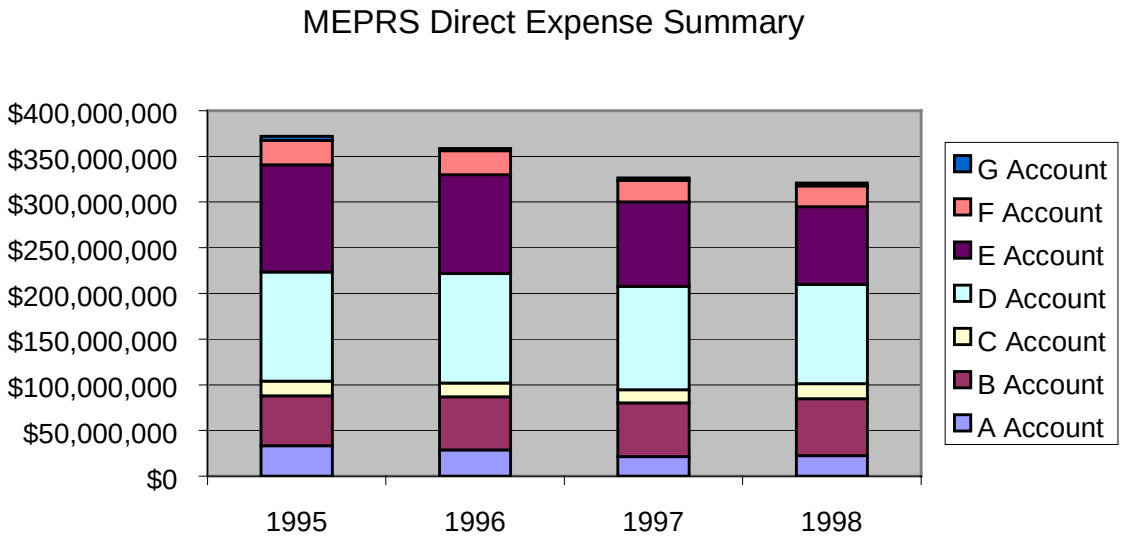


Figure 20. Direct Expense Summary, by major MEPRS account categories for fiscal years 1995 through 1998.

Table 3

MEPRS Account Titles

A Account	Inpatient Costs
B Account	Outpatient Costs
C Account	Dental Costs
D Account	Ancillary Costs
E Account	Support Costs
F Account	Special Projects
G Account	Readiness Costs

Table 3. MEPRS major category account titles and costs they represent.

One major MEPRS category, the B Account (outpatient costs), experienced an increased over the four year period. Outpatient costs increased from $133.7 million in 1995 to $143.6 million in 1998 or 7.4 %, see Figure 21. The data reflects the distribution of support and ancillary costs from the D and E expense accounts to the other major MEPRS categories.

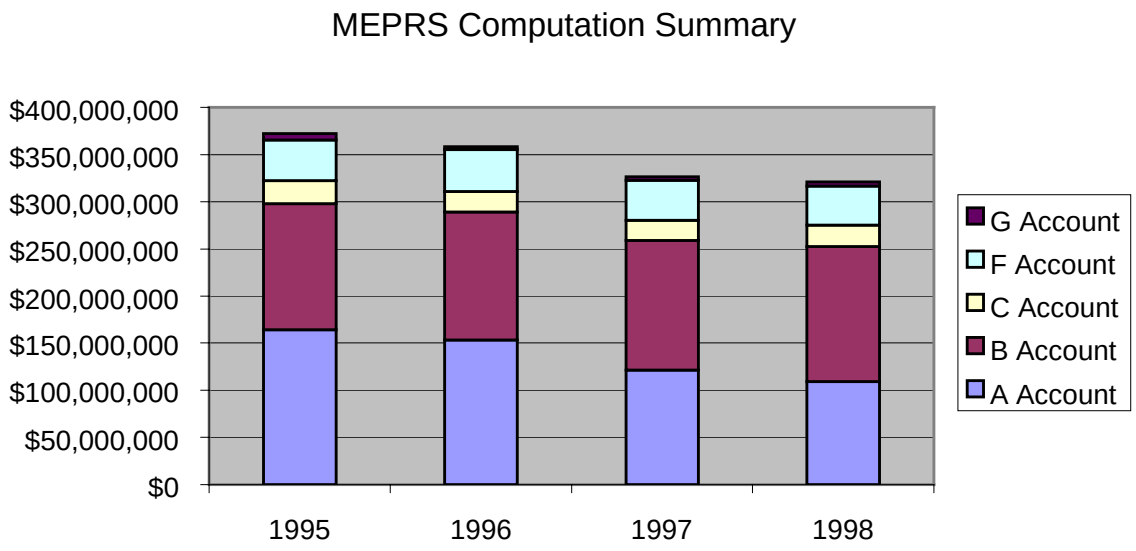


Figure 21. MEPRS Computation Summary reflecting the distribution of ancillary and support expenses to the five remaining accounts, for fiscal years 1995 through 1998.

DISCUSSION

Wilford Hall Medical Center has experienced a significant reduction in the number of dispositions, approximately 45% over the past two years. Sound utilization management may not be the only cause for this reduction. As the data has shown, confounding factors such as DoD referral policy changes, a shrinking beneficiary population, and a shift in the mix of beneficiary categories have each, to some degree, had an impact on the number of dispositions at Wilford Hall.

The confounding factor with the greatest impact on total dispositions has been the change in referral patterns due to DoD policy changes. The drop in dispositions originating from outside the local catchment areas represents 42% of the overall drop in the last three years. This is a factor external to Wilford Hall and not as a result of any direct effort on the part of the facility (**this is a key finding in this study**). A portion of this change may still be due to effective utilization management however, this would be attributable to the efforts of the referring facilities and not Wilford Hall necessarily. The change in policy does, however, represent an effort to provide a higher quality of care on the part of the MHS.

The change in the size of the beneficiary population has experienced only minor fluctuations in the last three years. There is a projected decrease of .17% by 2000 and an increase of only 2.1% by the year 2005. It is unlikely that the changes in population size have or will have any significant impact on patient dispositions.

The change in the mix of beneficiary categories represents a more significant impact on inpatient utilization. The data shows that the older population categories of retirees and their family members have been growing steadily over the past three years, while the younger active duty population and their family members have been decreasing. Although the data does indicate a shift of the population toward an older more resource intensive beneficiary, the data indicates that all patient categories, including retirees and their family members are experiencing a decline in inpatient utilization. One explanation for this may be access. The graphs illustrating the dispositions of the Retiree and Retiree Family Member categories over the past nine quarters reflect an almost identical shift in the number of dispositions. This may reflect

declining access to the facility rather than the result of utilization management. Another words, a decrease in inpatient utilization derived from policies restricting inpatient access for those patient groups verses the result of utilization management. On the other hand, since inpatient utilization has been dropping, regardless of patient category, the decrease may still be due to a factor that is not patient category specific such as utilization management.

With a significant decline in inpatient dispositions, resulting from utilization management or confounding factors, the costs for inpatient operations have also dropped significantly. In the last four years, inpatient costs have been lowered by over $55 million or 33.5%. This drop in costs is from a combined reduction of personnel, support and ancillary expenses. Support Costs have experienced the greatest decline of 51.8%, a reduction expected with ward closures and therefore less overhead expenses assigned to inpatient operations.

Although the overall costs for inpatient operations have been significantly reduced, the per disposition and OBD costs have risen over the same period. Per disposition costs have jumped 25.4% over the last three years. The two service categories which have experienced the largest increase in costs are surgical and orthopedics, approximately 78% and 40% respectively.

It may be expected that health care systems that successfully lower their number of dispositions would have fewer more resource intensive patients. The result, in turn, would be a higher per disposition costs. The data reveals that this is not the case at Wilford Hall Medical Center. Instead of rising, the intensity of illness (CMI) actually

decreased in every major patient category. The cumulative CMI dropped from 1.24 to 1.20 over the last nine quarters.

The only local patient category to experience an increase in CMI was the Guard/Reserve category. Since this category represents such a low volume of patients, 20 dispositions in a quarter is the highest over the nine quarter period, erratic CMI fluctuations would be expected. The Other category also experienced an increase in CMI, this is to be expected since many of the patients who fall under the other category are the trauma patients seen at Wilford Hall's Emergency Room regardless of military benefits eligibility. Since these patients are normally trauma related, their care is extensive and long term.

The average lengths of stay were examined to see if longer stays could account for the increase in per disposition costs. The data has shown that the accumulative ALOS has dropped over the last two years. The ALOS has dropped from an average of 4.7 days to 3.79 days. The ALOS for every major patient category has dropped. The only category not to have decreased is the Other category. As explained above, this category includes civilian trauma patients seen in the emergency room and admitted for recovery.

The MEPRS data reveals that overall costs for inpatient operations have been cut by 33.5% in the past four years. Support, Ancillary and Direct costs have all decreased, 51.8%, 26.4%, and 33.2%, respectively. However, the rate of decline in inpatient expenses has not kept pace with the reduction in dispositions, 33.5% compared to 45%. Since dispositions are dropping at a faster rate than inpatient costs, the cost per dispositions must rise. Although a one-to-one match in the reduction of dispositions and the costs for them would not be expected, several categories identified above demonstrate

a wider gap than the accumulative figures reflect. This indicates that some services have done better in responding to declining inpatient activity than others. Although it does require a lag time for personnel, equipment and other resources to match the requirement set by the flow of patients, the rate of costs reduction over the past four years has continued to remain behind the rate of decline of dispositions.

CONCLUSIONS AND RECOMMENDATIONS

Wilford Hall Medical Center has been successful in reducing its inpatient operations. The rapid decline in dispositions is attributable to both utilization management, as well as, factors external to the medical center.

The confounding factor of the DoD referral policy change can be attributed to approximately 42% of the decrease in dispositions. Although there will be an eventual leveling in the number of dispositions from outside the local catchment areas, the data indicates that the current downward trend to be strong through the first quarter of 1999. Further reductions may continue before the leveling occurs. A study to follow referral patterns and sources may help predict future changes and allow time for adjustments in inpatient operations to appropriately meet inpatient workload.

Although there has been a shift in the mix of beneficiary population support by the local catchment area, no significant impact on inpatient utilization has been realized. Further decreases in Active Duty and Active Family Member categories, in conjunction with further increases in the Retiree and Retiree Family Member categories could eventually impact on inpatient operations. This is with the assumption that access will remain constant for each beneficiary category.

The total population for the two local catchment areas is projected to decrease by .17% in the year 2000. There is a forecasted increase of only 2.10% by the year 2005. The beneficiary population size is unlikely to play any significant impact on the rate of dispositions or have any significant effect on inpatient costs.

Every major expense type within inpatient operations has been reduced. Of note was personnel costs, which was reduced by 33.2% over the past four years. The total costs of inpatient operations has been reduced by $55.1 million or 33.5%. However, despite the reductions in costs, a declining CMI, and an accumulative ALOS that has dropped nearly one full day, the per dispositions costs have risen by 25.4%.

Although inpatient operation expenses have been greatly reduced at Wilford Hall, reductions have not kept pace with the declining number of inpatients seen at the facility. The data shows that every major category of expense in inpatient operations, including personnel expenses have dropped at least 26%, for a combined reduction of 33.5%. The reason per disposition costs continue to rise is the rate of reductions in dispositions is steeper than the rate of reduction in expenses. In order to keep per dispositions level, further costs reduction efforts are required.

I recommend a further study of the expenses associated with inpatient operations. I suggest a specific focus on surgery and orthopedic services, since these are the two service categories that experienced the greatest reduction in the number of dispositions while experiencing the greatest increase in per disposition costs. Expenses such as personnel, supplies, equipment and space should be examine to make certain these services are responding to the changing demand of their services.

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